

The Brazilian Agro-energy Plan (PNA) and sugarcane expansion in Brazil.

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Ecoa is a member of RedeBio

- A network which connects organizations to the World debate about biofuels aiming:
- To prepare sustainable proposals for biofuel production;
- To contribute for public policies and
- To support the grassroots organizations based (mainly) in biofuel expansion zones.
- Members:

Amigos da Terra Amazonia;
Both Ends;
M'Bigua;
Ecoa;
Vitae Civilis;
Imaflora;
Instituto Centro de Vida;
Conservation International;
Dieese – the main organism for advise to
syndicates in Brazil;
4 Cantos;
Repórter Brasil;
Mater Natura.

Premise: question mark!

Scenario before World Crises:

- Brazilian agriculture economy was entering a **new cycle** (for me a 'third' cycle) highlighted by large investments in agricultural commodities and sugarcane to produce ethanol and electricity from biomass.
- The investments were coming from several sources: companies such as: Petrobras, governmental banks and finance sector as: **George Soros**, Vinod Khosla, Wellington Management, Kidd & Company, Stark e Och Ziff Management and Merrill Lynch)
- Investments on sugarcane production were around 10 billions USD. Forecast until **2015** was of **33 billions USD**.
- Source: ESP newspaper/ Unica – august 20.

Current Scenario: Who knows?

A territorial approach is key. Why?

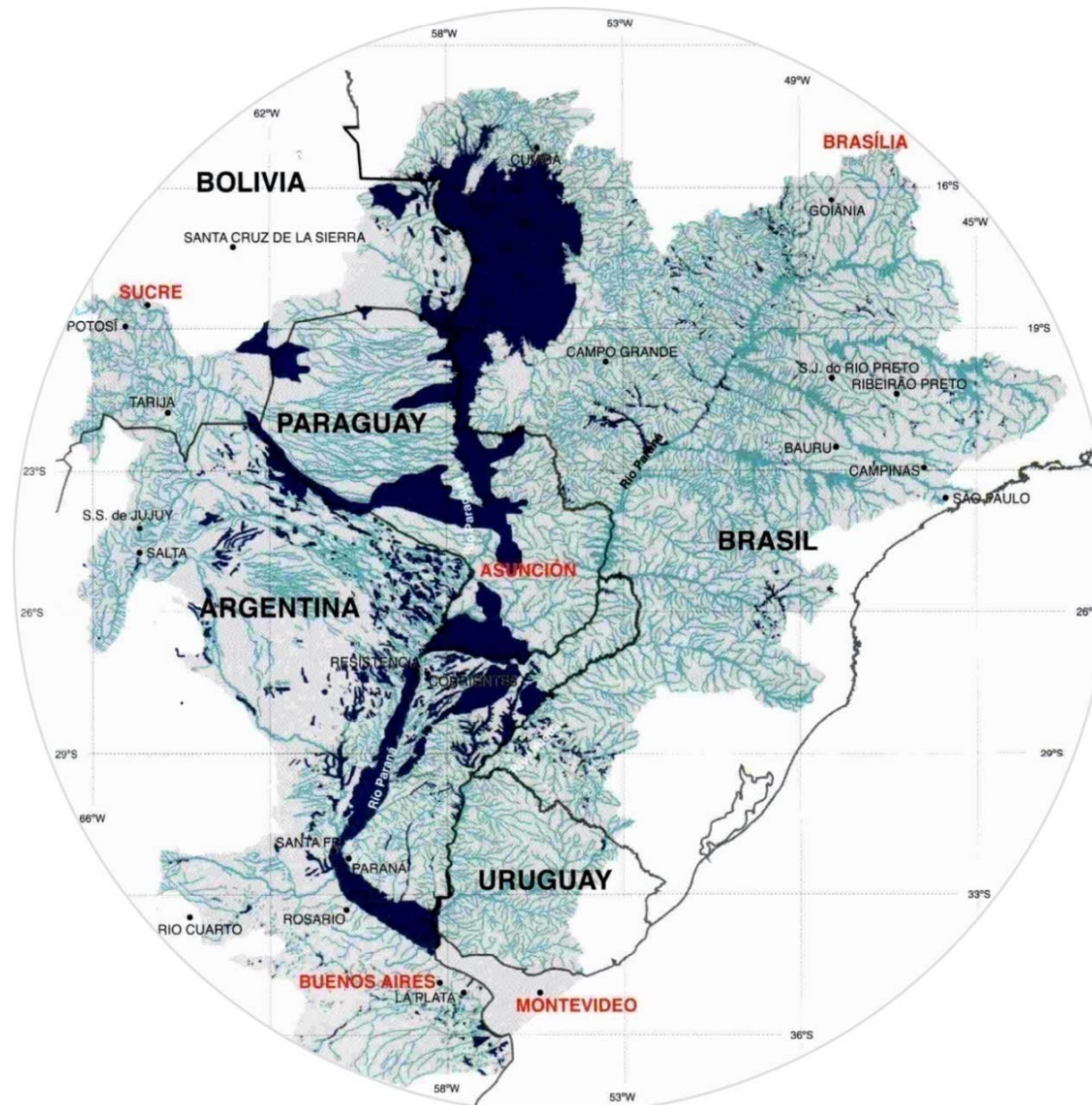
- Biofuel and grains **compete** for the most productive lands.
- We are researching a sub-basin as a case study: **Ivinhema**, traditionally occupied by grains and meat production.

Brazilian Biomes



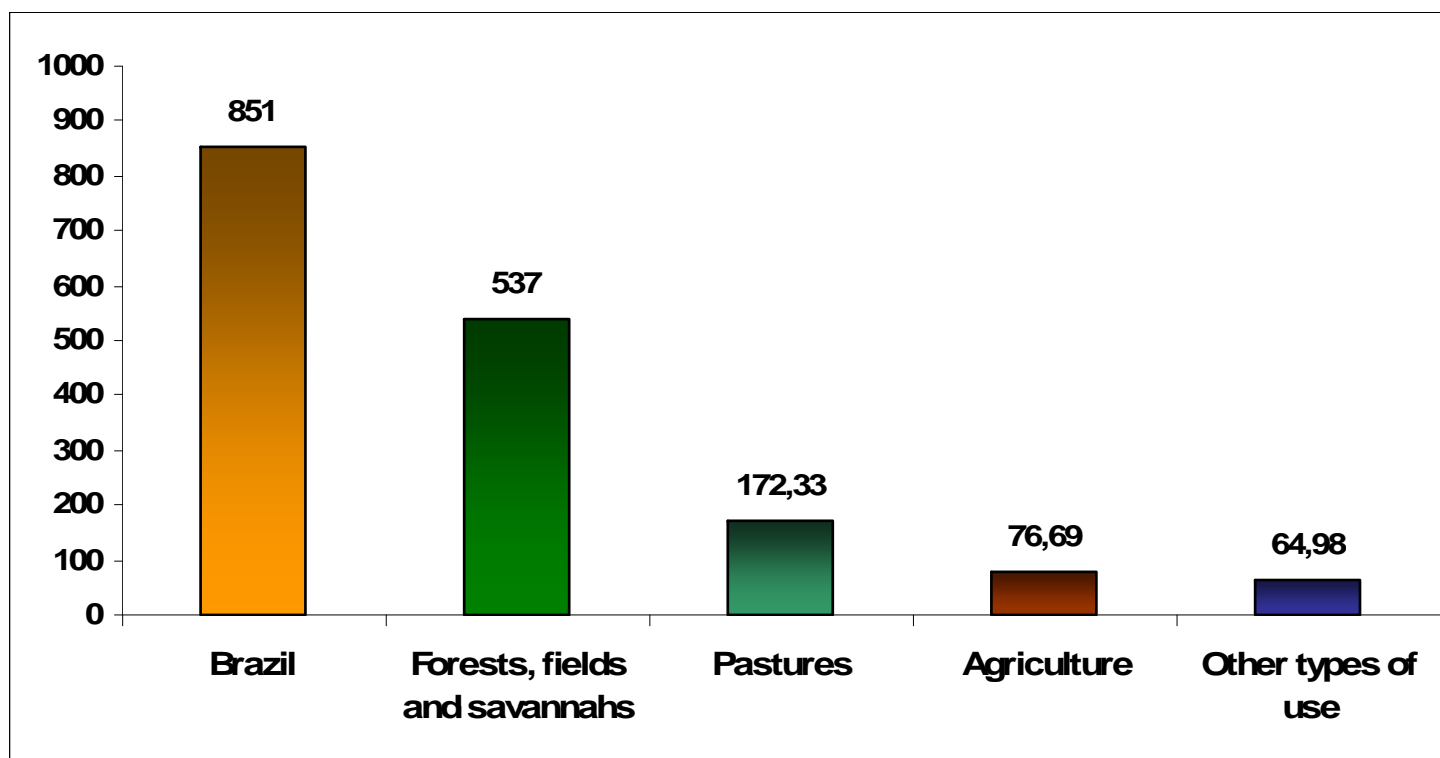
Source: IBGE, 2008.

Paraguay-Paraná Wetland System



Source: Digital Map from CIC (Comité Intergubernamental Coordinador de los Países de la Cuenca del Plata), Programa Marco para la gestión sostenible de los recursos hídricos de la Cuenca del Plata en relación a los efectos de la variabilidad y el cambio climático - 1ª edición - Buenos Aires, 2005.

The uses of Brazilian lands (million hectares)



Source: Embrapa and IBGE, 2007.

Brazilian Agro-energy Plan

The Brazilian Agro-energy Plan (PNA) -2006-2011 was elaborated by the Ministry of Agriculture, Cattle-raising and Supply (MAPA) and by the Brazilian Cattle-Raising Research Company (Embrapa), with the objective of expanding the presence of bio-fuels in the energy matrix in a “planned and sustainable way.” This guarantees that the country possesses an immense stock of available lands and that the expansion can be based on four comparative advantages for production:

- 1) The ***possibility of large-scale irrigation*** planting, since the country possesses one fourth of the superficial and underground fresh water reserves on the planet;
- 2) The possibility of multiple plantings in the year according to “***productive windows***”, such as the crop and mini crop systems already adopted for grain or the summer and winter crop;

Brazilian Agro-energy Plan

3) The possibility of Brazil “incorporating ***new areas*** to energy agriculture ***without competing with food agriculture*** and with limited environmental impact to what is socially acceptable. Thus, the Cerrados expansion area, the cattle-raising – farming integration, the degraded pastures, areas of reforestation and the currently marginalized areas – such as the Northeast Semi arid region – add up to 200 million hectares.”

4) The extension and geographic location of Brazil, whose major part is found in the tropical and subtropical strips, with intense ***solar radiation*** (source of bio-energy) besides having great diversity of climate, possessing “exuberant ***biodiversity***,” which allows for “various options associated with the planting of energy;”

Brazilian Agro-energy Plan

■ Strictly speaking, PNA utilizes for its construction the current ideas regarding the bio-fuels possibilities in the country, which are based in their majority, in favorable environmental conditions – biodiversity, water, surface relief, ground and climate and taking into account a great availability of lands for the expansion of agriculture and, therefore, of agro-energy in a harmonious way with the agricultural production;

■ **The PNA considers that there are 200 million hectares of available land for the agriculture expansion.**

■ **Other institutions offer distinct numbers.**

Strategic information about lands use in Brazil

■ The PNA considers that there are 200 million hectares of available land for the expansion of agriculture. Other institutions offer distinct numbers.

■ **Cattle-raising:**

- It is an inefficient area of the agriculture economy;
- It is the principal agent of environmental degradation through deforestation in the Amazon;
- Occupies around **25% of the national territory and** generating only 2.64% of the Gross National Product (GNP) – 30 billions of dollars in 2006;
- The meat production average is too low: 40 kilos per hectare per year.

■ **Agriculture:** takes up 7.5% of the territory and 18.5% of the arable lands, generating 3,47% the GNP in 2006.



Degraded pasture in Nova Alvorada do Sul, located in the Ivinhema sub-basin –Brazil
Foto: Ecoa - 2007

Agricultural GNP and its participation on the country's wealth (2006).

GNP	GNP (billions of dollars)	Occupied area (millions of hectares)	Participation on GNP BR (%)
Brazil	1.110,00	851,00	100,00
Agricultural	69,66	235,30	6,11
- Agriculture	39,52	62,00	3,47
- Livestock	30,14	172,30	2,64

Source livestock area: IBGE, 2007.

Source agricultural area: MAPA, 2007.

Source GNP: IBGE, 2007.

Source Agricultural GNP: CEPEA/CNA (Cattle-Raising and Agriculture Confederacy of Brazil), 2006.

Strategic information about lands use in Brazil

- Cerrado, according to engineer and researcher Mauricio Galinkin, there remains 20% of the native vegetation, with the risk of completely disappearing until 2030. Of the original 204 million hectares, 57% have already been deforested and half of the remaining areas have been altered.
- Deforesting in Cerrado today has reached 3 million hectares per year.
- In the Amazon 70 million hectares have been deforested of the existing 420 in the Brazilian territory – the region spreads through 9 countries, with a total area of 660 million hectares.
- Of the 70 million hectares cut down in the Amazon, around 25% have no use or are under utilized.
- The biome that suffers the most direct impact in agriculture and the most threatened is Cerrado. Indirectly, through the transference of activities such as cattle-raising and Soya plantations, is the Amazon. The eco region of Pantanal – the largest humid area in the world – also suffers direct and indirect impacts.

Area occupied by sugarcane in Brazil (2007/2008)

Total area: 6,96 millions of hectares

Sugar

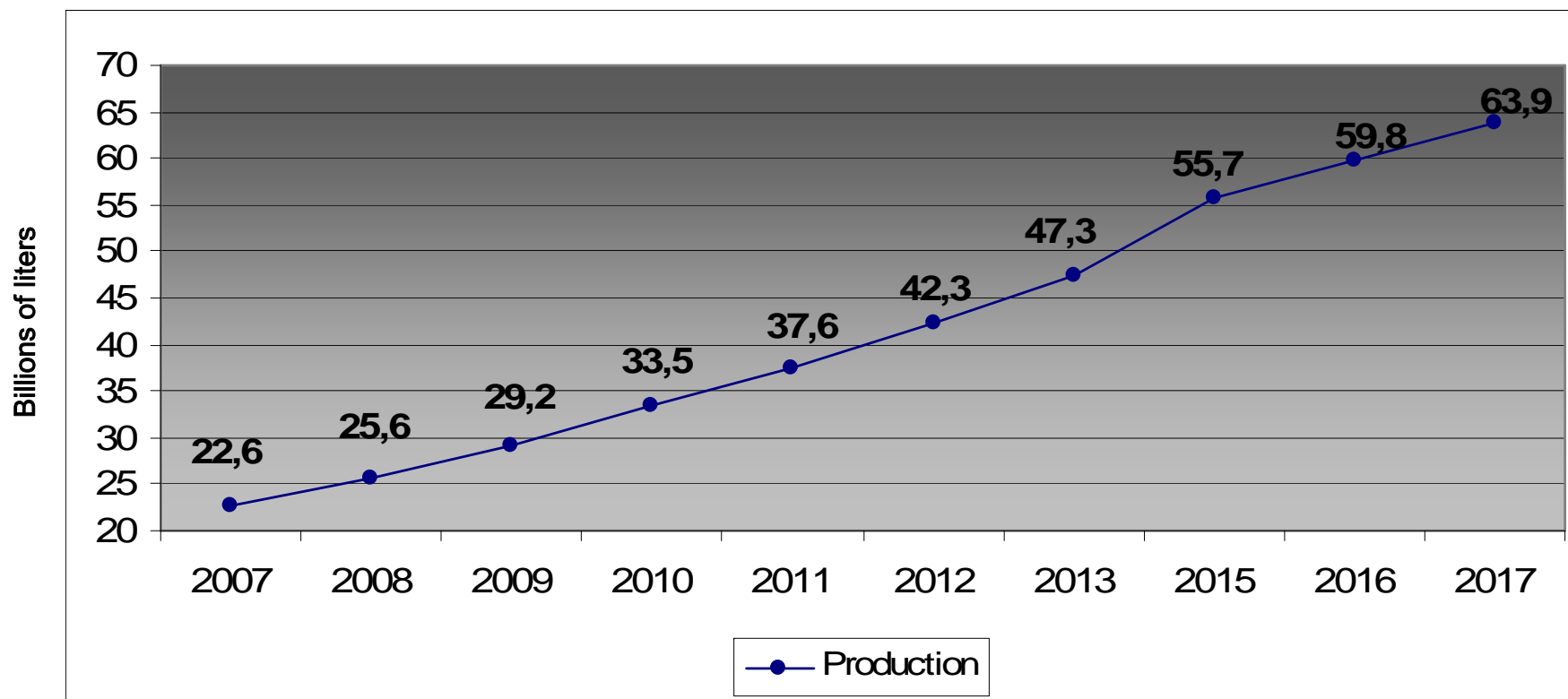
2.83 millions of hectares



Ethanol

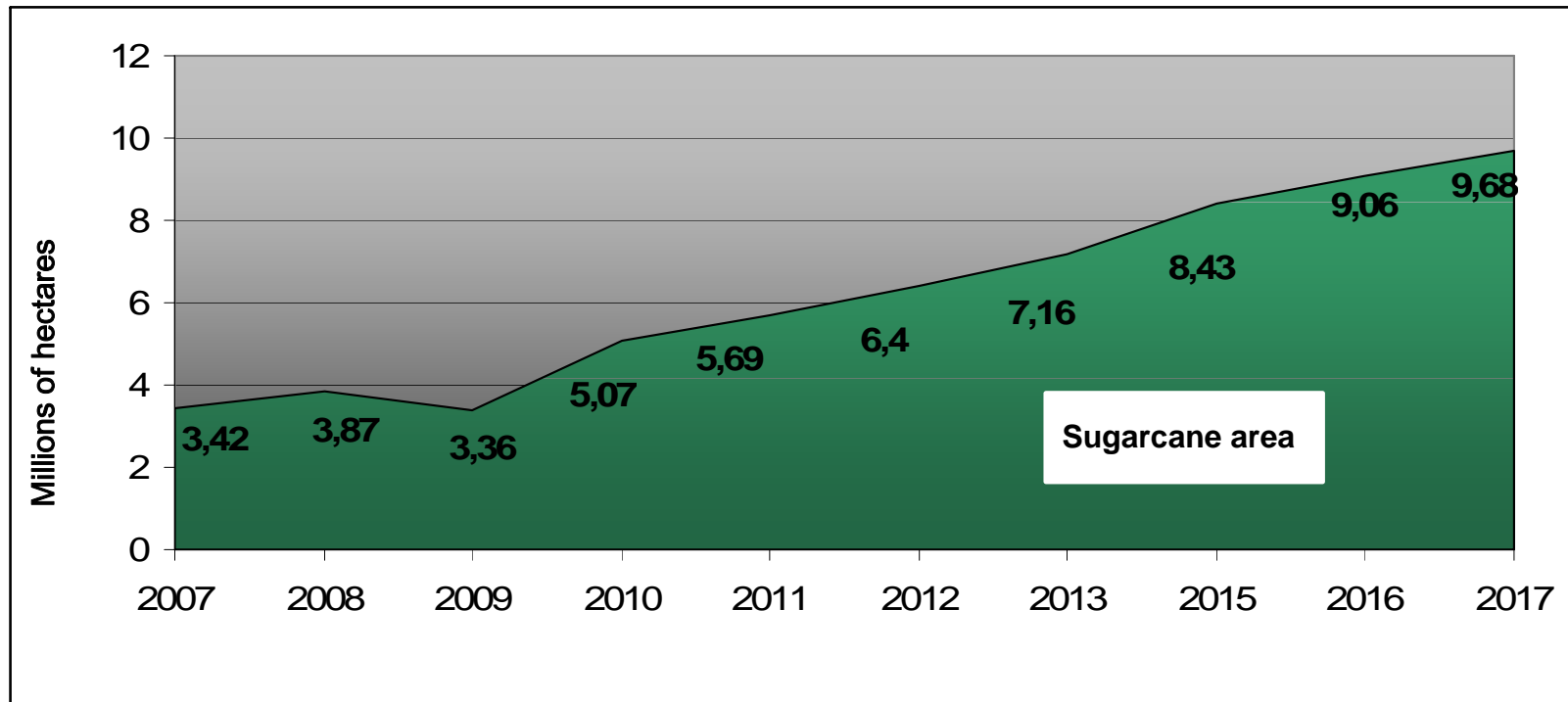
3.19 millions of hectares

Projection for ethanol production



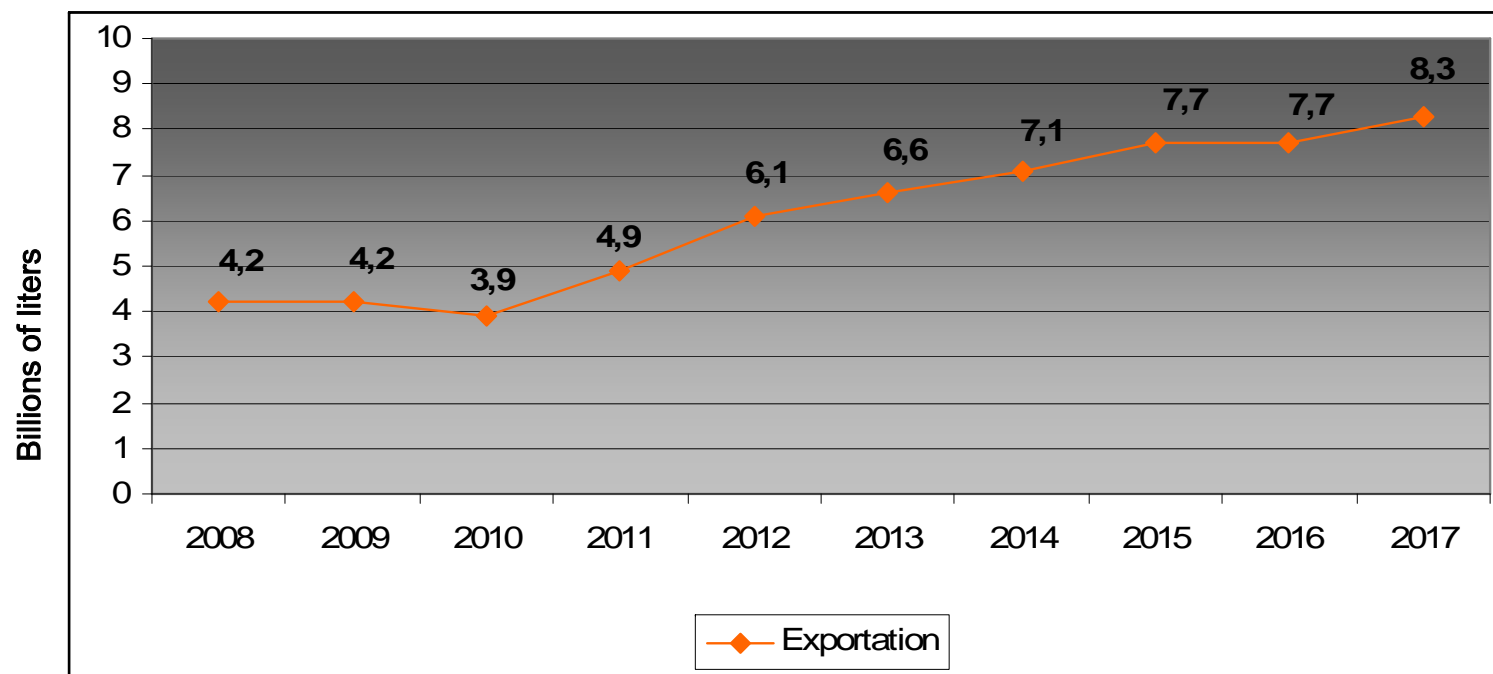
Source: EPE, 2008.

Projection for sugarcane area for ethanol production: 5% of “PNA lands” (200 millions)



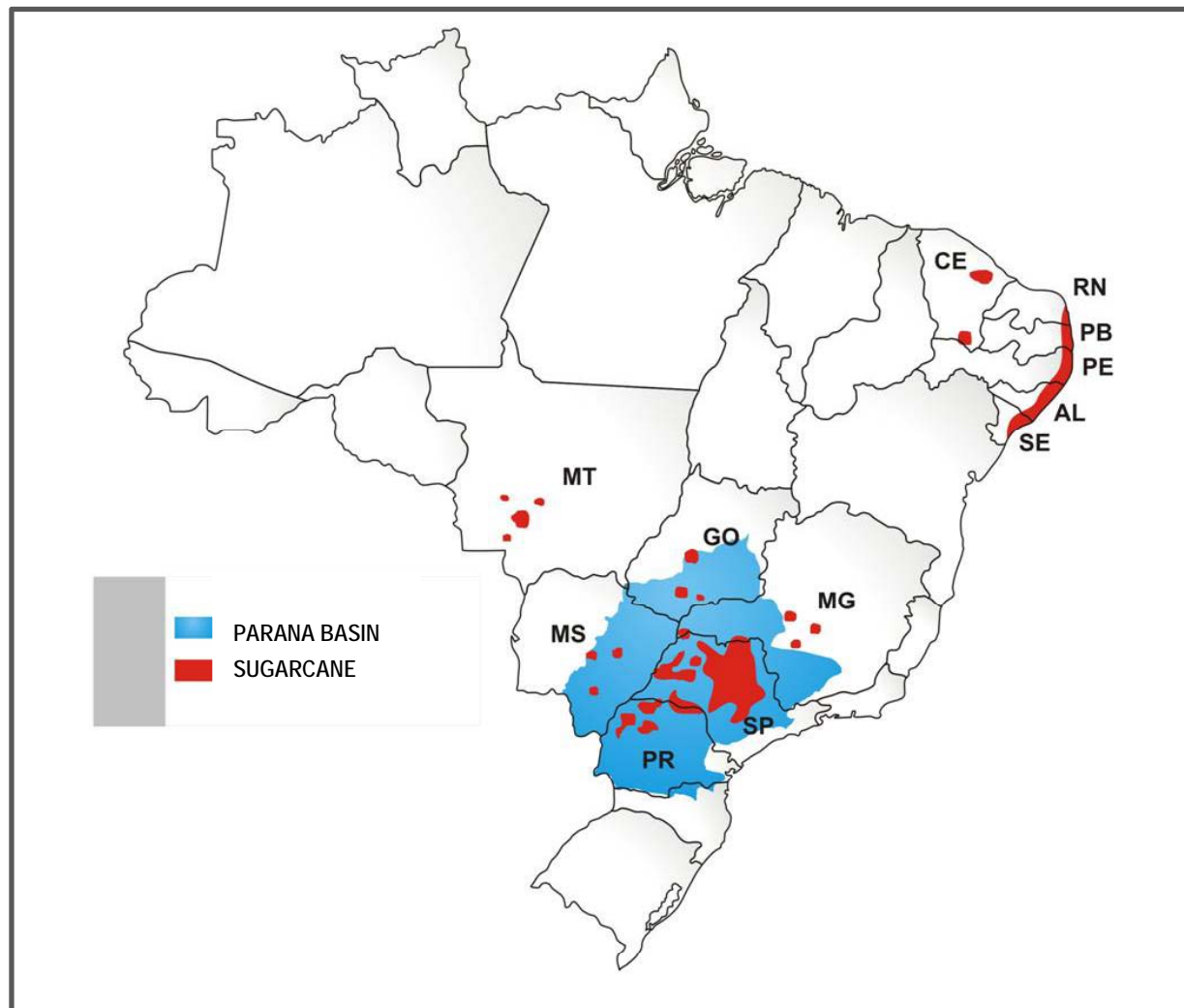
Source: Based on EPE's production projection, 2008, considering 6,6 thousand of liters of ethanol per hectare.

Projection for ethanol exportation: 13 % of production in 2017.



Source: EPE, 2008.

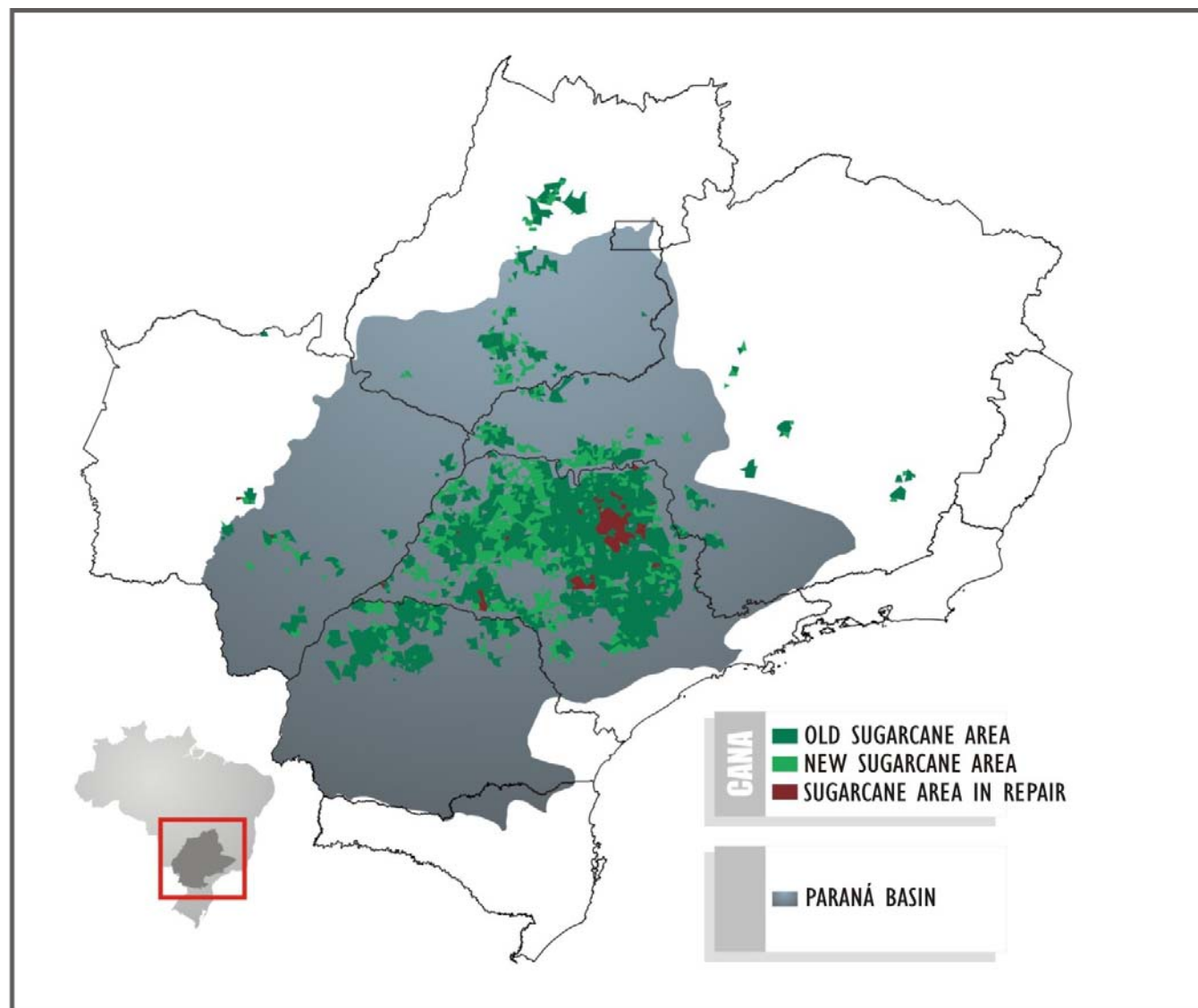
Sugarcane in Brazil (2007)



Source: Nipe/Unicamp, IBGE and Unica, 2008.

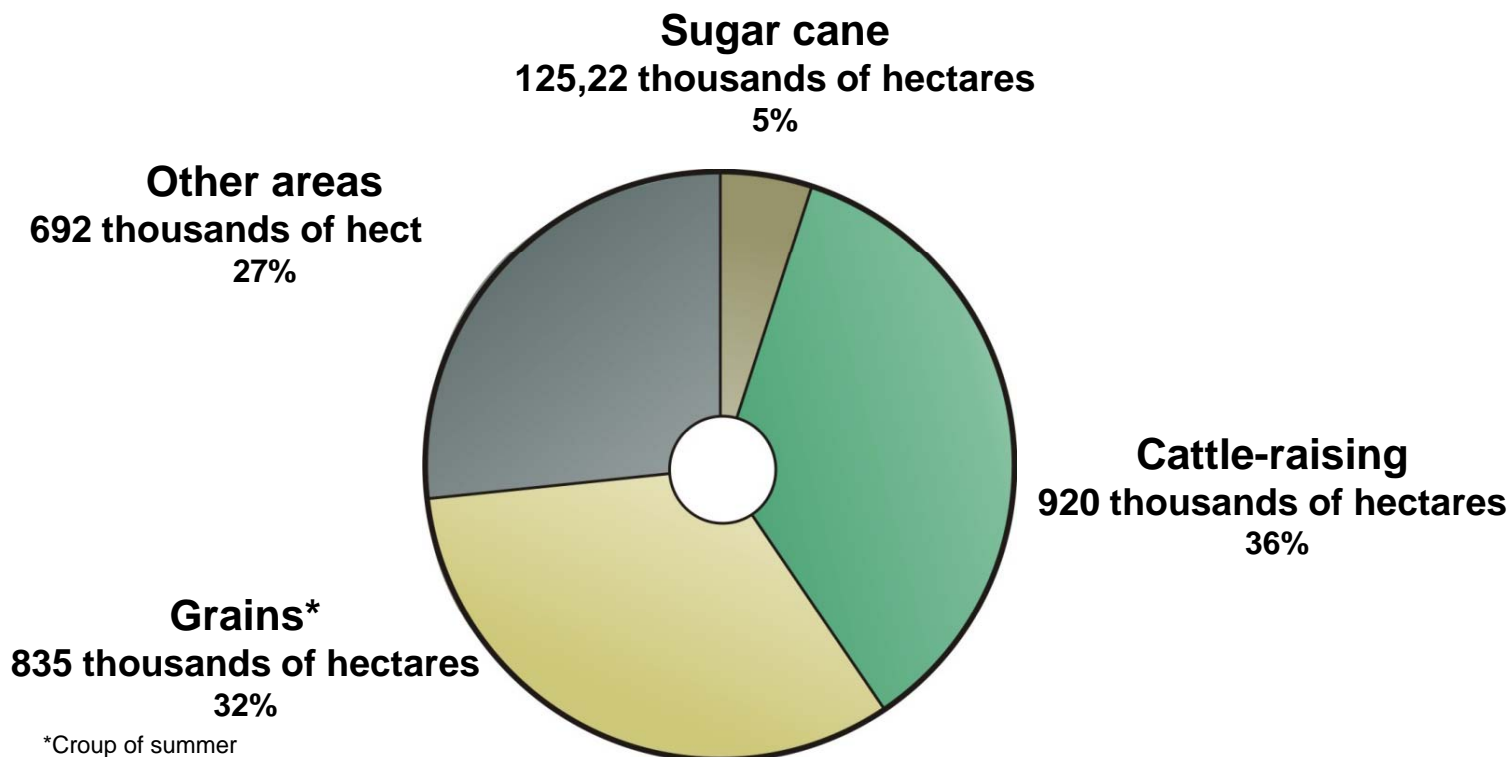
Distribution of sugarcane in Paraná basin (2007)

Paraná basin
represents
80% of the
sugarcane in
the country.



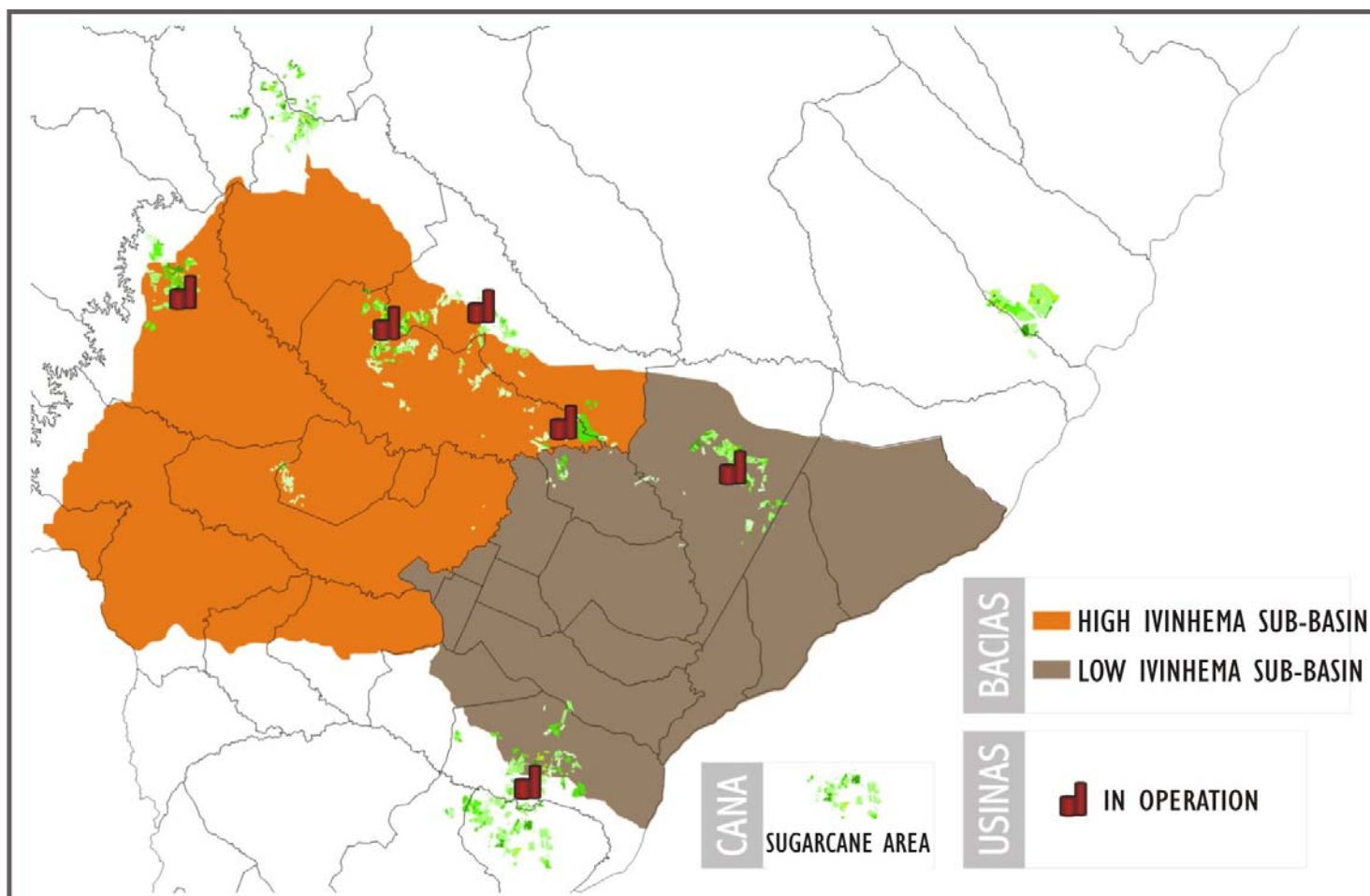
Source: Canasat, 2008

Ivinhema sub-basin (2006)



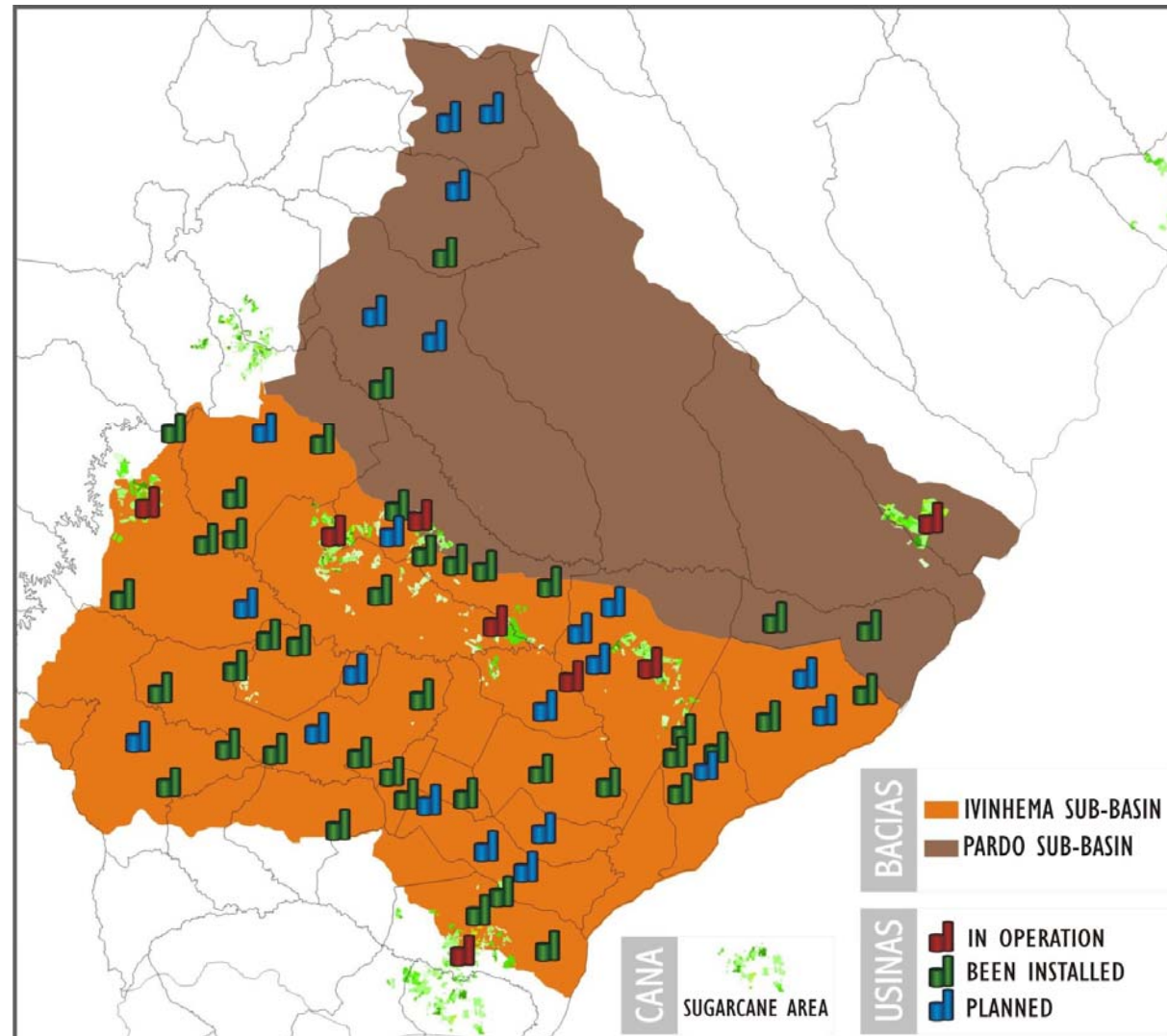
The projection for 2015 is of 2.2 millions of hectares of sugarcane, that corresponds 47% of the territory of Ivinhema sub-basin.

Industries in operation in Ivinhema sub-basin (2006/2007)



Source: Ecoa, 2008.

Projection for ethanol plants in Ivinhema and Pardo Rivers sub-basin (2015)



Source: Ecoa, 2008.

Ivinhema sub-basin area to sugarcane (thousand hectare)

	2006	2015
High sub-basin	125,22	1.279,22
Low sub-basin	50,58	929,56
Ivinhema sub-basin	175,8	2.208,78



Corn plantation area in Batayporã, located in the Ivinhema sub-basin, where there will be installed an industrie financed by Ceron Group.

Foto: Ecoa - 2007

Corn plantation area in Batayporã, located in the Ivinhema sub-basin – Brazil, where there will be installed an industrie financed by Ceron Group.

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Corn plantation area in Batayporã, located in the Ivinhema sub-basin – Brazil, where there will be installed an industrie financed by Ceron Group.

Foto: Ecoa - 2007





Grain storages in Nova Alvorada do Sul, located in the Ivinhema sub-basin – Brazil
Foto: Ecoa - 2007



Grain storages in Rio Brilhante, located in the Ivinhema sub-basin – Brazil.

Foto: Ecoa - 2007

Louis Dreyfus Commodities



Inquires

- Substitution of food culture
- Land Price
- Amplifying of monoculture
- Increase of foods prices
- Familiar agriculture
- Conservation areas and sustainable use of biodiversity (ex: Cerrado)
- Contamination of land and fountainhead by the chemical residue
- Vinasse
- Burn
- Labor
- Indigenous

Notes

- The use of biomass for energy generation could be one of the positive aspects of sugar-cane production in the country, including environmental factors, since it could prevent new hydroelectric plants from being built in the Amazon – big agents in the deforestation – and even the application of the expansion plan of nuclear centers (50) informed recently by the Federal Government.
- The main warning is for the necessity of disciplining the expansion through the specific credit policies, infra-structure and tax benefits.



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